



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,148	06/22/2006	Dagmara Ortmann	291685US0X PCT	1447
22850	7590	02/17/2010		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER NWAONICHA, CHUKWUMA O	
			ART UNIT 1621	PAPER NUMBER
			NOTIFICATION DATE 02/17/2010	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* DAGMARA ORTMANN, KLAUSE-DIETHEER WIESE,  
OLIVER MOLLER, and DIRK FRIDAG

---

Appeal 2009-007994  
Application 10/584,148  
Technology Center 1600

---

Decided: February 12, 2010

---

Before TONI R. SCHEINER, DONALD E. ADAMS, and  
LORA M. GREEN, *Administrative Patent Judges*.

ADAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims 1-17, the only claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

### STATEMENT OF THE CASE

The claims are directed to a process for preparing trivalent organophosphorus compounds. Claim 1 is illustrative:

1. A process for preparing trivalent organophosphorus compounds by condensing phosphorus compounds of the formula i



where Hal is a halide selected from chlorine, bromine and iodine and may be the same or different when a plurality of halides are present ( $a > 1$ ), R is an organic radical bonded to the phosphorus via a carbon or oxygen atom, and, when  $a < 2$ , the R radicals present may be the same or different, and a is a number from 1 to 3,

with organic compounds that have at least one OH group,  
the process comprising carrying out the condensation reaction in the presence of at least one basic ion exchange resin.

Claims 2-13 depend directly or indirectly from claim 1.

The Examiner relies on the following evidence:

Ralph C. Gatrone et al., *The Synthesis and Purification of the Carbamoylmethylphosphine Oxides*, 5 SOLVENT EXTRACTION AND ION EXCHANGE 1075-1116 (1987).

Lenore M. Martin, *Facile Reduction in the Synthesis of Phosphorylcholine Affinity Columns*, 37 TETRAHEDRON LETTERS 7921-7924 (1996).

The rejection presented by the Examiner follows:

Claims 1-17 stand rejected under 35 U.S.C § 103(a) as unpatentable over the combination of Gatrone and Martin.

We reverse.

## ISSUE

Have Appellants established that the combination of Gatrone and Martin fails to teach a process wherein the condensation reaction is carried out in the presence of at least one basic ion exchange resin?

## FINDINGS OF FACT

FF 1. Gatrone teaches a process for preparing Bis(2-n-Hexyloxyethyl)(phenyl)phosphonite, wherein dichloro(phenyl)phosphine is “added dropwise to a stirred solution of 2-n-hexyloxyethanol . . . [in] pyridine” (Gatrone 1080: 22-25; *see also* Ans. 5 (Gatrone teaches a “process for preparing trivalent organophosphorus compounds”).

FF 2. Gatrone teaches the use of ion exchange resins to purify Carbamoylmethylphosphine Oxides (CMPOs) produced by the foregoing process (*see e.g.*, Gatrone 1086: 12-29).

FF 3. Martin teaches the following reaction,

The reaction scheme shows the following structures and labels:

- (1b)**: 4-nitrophenylphosphorodichloridate, represented as a benzene ring with a nitro group (NO<sub>2</sub>) at the para position and a -O-P(=O)(Cl)<sub>2</sub> group at the other para position.
- (2b)**: 2-n-hexyloxyethanol, represented as HO-CH<sub>2</sub>-CH<sub>2</sub>-O-C<sub>6</sub>H<sub>13</sub>.
- (1e)**: Bis(2-n-hexyloxyethyl)(4-nitrophenyl)phosphonite, represented as a benzene ring with a nitro group (NO<sub>2</sub>) at the para position and a -O-P(=O)(OCH<sub>2</sub>CH<sub>2</sub>C<sub>6</sub>H<sub>13</sub>)<sub>2</sub> group at the other para position.

The reaction is indicated by an arrow with the number 23 above it.

(Martin 7922: 10-14; Scheme 1).

FF 4. Martin teaches that “[c]holine iodide 3 reacted with 4-nitrophenylphosphorodichloridate 2 in the presence of quinoline . . . followed by quenching with pyridine-water in the presence of IWT<sup>®</sup>-TMD-8 ion exchange resin,” which is “b” in the foregoing reaction scheme (Martin 7922: 15-16 and 19-21).

FF 5. The Examiner finds that Gatrone “differs from the instantly claimed process” by employing “acidic and basic ion exchange resins in conjunction” (Ans. 5).

FF 6. The Examiner finds that “Martin teaches the reacting of halogenated phosphorus compound with hydroxyl compound in the presence of a basic ion exchange resin” (*id.*).

FF 7. The Examiner finds that both Gatrone and Martin “employed an amine/resin during the reaction” (Ans. 7).

FF 8. In this regard, the Examiner finds that “[t]he use of any base . . . pyridine, basic ion exchange resin . . . or mixture of basic compounds to capture or neutralize the HCl has no effect on the process conditions” (Ans. 8).

#### PRINCIPLES OF LAW

“[T]he [E]xaminer bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). On appeal to this Board, Appellants must show that the Examiner has not sustained the required burden. *See Ex parte Yamaguchi*, 88 USPQ2d 1606, 1608 and 1614 (BPAI 2008) (precedential); *Ex parte Fu*, 89 USPQ2d 1115, 1118 and 1123 (BPAI 2008) (precedential).

##### An invention

composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. . . . [I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.

*KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007).

## ANALYSIS

Based on the combined teachings of Gatrone and Martin, the Examiner reasons that “all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions” (Ans. 6). Thus, the Examiner concludes that “[o]ne of ordinary skill in the art would have a reasonable expectation of success in practicing the instant invention by varying the process conditions from the teaching of Gatrone et al. and Martin to arrive at the instantly claimed process for preparing trivalent organophosphorus compounds” (Ans. 5).

Notwithstanding the Examiner’s finding that Gatrone and Martin “employed an anime/resin during the reaction” (FF 7), Appellants contend that Gatrone used ion exchange resins to remove impurities “after the reaction has been conducted” which fails to suggest a condensation reaction that is carried out in the presence of at least one basic ion exchange resin as required by Appellants’ claimed invention (App. Br. 4-5). We agree with Appellants’ contention (*see* FF 1-2). As Appellants explain “a disclosure of addition [of an ion exchange resin] after the reaction does not suggest [its] presence during the reaction” (Reply Br. 2). We agree.

Appellants contend that the 4-nitrophenylphosphorodichloridate compound utilized in Martin’s reaction “is different from, and not suggestive of, the particular dichloro(phenyl)phosphine of Gatrone et al, which contains no O moiety, let alone a P=O group” (App. Br. 5 (emphasis removed)). We agree. The Examiner failed to adequately explain why a person of ordinary skill in this art would have looked to Martin to modify the reaction set forth in Gatrone. We are not persuaded by the Examiner’s assertion that “the

starting materials, the product of the reaction and the reaction medium are immaterial in this situation” (Ans. 8). To the contrary, we agree with Appellants’ contention that the claim “limitations are material, and may not be ignored” (Reply Br. 2).

Nevertheless, we recognize the Examiner’s finding that “[t]he use of any base. . . pyridine, basic ion exchange resin . . . or mixture of basic compounds to capture or neutralize the HCl has no effect on the process conditions” (FF 8). However, as Appellants point out, “the Examiner has presented no facts to support these findings” (Reply Br. 3). Instead, the prior art of record suggests the use of ion exchange resins in a post-production process *to purify* CMPOs (FF 2) and *to quench* a reaction (FF 4).

Notwithstanding, the Examiner’s unsupported assertions to the contrary, the evidence on this record fails to suggest a condensation reaction involving a phosphorous compound of formula i and organic compounds that have at least one OH group that is carried out in the presence of at least one basic ion exchange resin as is required by Appellants’ claimed invention.

### CONCLUSION OF LAW

Appellants established that the combination of Gatrone and Martin fails to teach a process wherein the condensation reaction is carried out in the presence of at least one basic ion exchange resin.

The rejection of claims 1-17 under 35 U.S.C § 103(a) as unpatentable over the combination of Gatrone and Martin is reversed.

Appeal 2009-007994  
Application 10/584,148

REVERSED

cdc

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.  
1940 DUKE STREET  
ALEXANDRIA VA 22314